

APPENDIX 6 -- DETERMINATION OF STOCKING VALUES FOR LAND USE CLASSIFICATION

Stocking values are required to determine if a CONDITION CLASS STATUS = 1 (accessible forest land) exists on a plot. This will determine which variables must be recorded for the condition. When the CONDITION CLASS STATUS is in question, (usually a nonforest area that is in the process of reverting to forest land or a marginal site that can only support a low number of trees) the crew must determine if there is sufficient stocking to classify the condition as forest. A minimum stocking value of 10% is required for accessible forestland (unless the condition was previously forested, such as a recent clear cut).

The following tables show the percent stocking of trees per acre needed to achieve this minimum stocking value. In the determination of stocking for this purpose the field crew should consider the condition over its entire area, not just the trees and seedlings that would be tallied on the subplots and microplots, especially when the condition straddles the plot. Also, for stocking purposes only consider a clump of trees (e.g., stump sprouts) less than 5 in DBH to be a single tree.

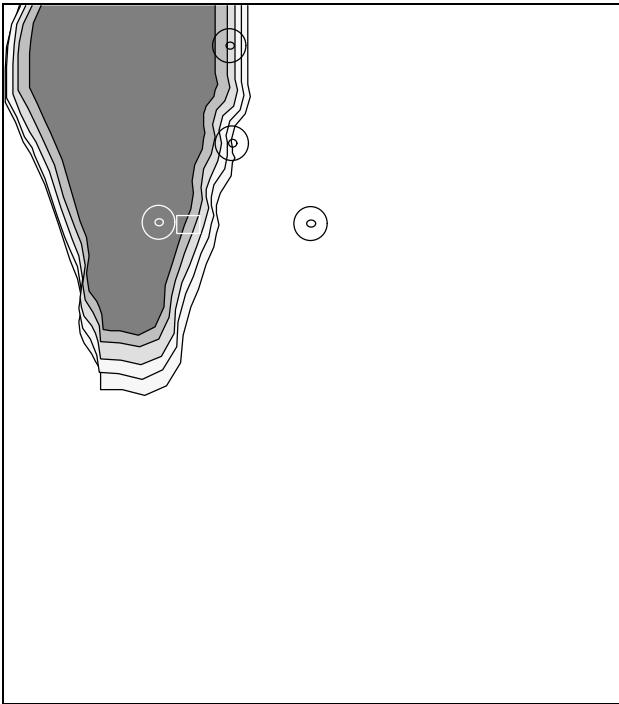
The number of trees per acre need to obtain minimum stocking depends on the DBH of largest tree in the condition (not necessarily a tally tree) and the forest type of the condition, and the size of the trees. If the condition occurs on all 4 subplots and the trees are distributed fairly evenly over the entire condition area, the following steps can be used to determine if the condition has the minimum percent stocking of trees per acre for forest land:

- Observe the diameter of the largest tree on the condition and classify the condition into one of the following groups, 5+, 4.0-4.9, 3.0-3.9, 2.0-2.9, 1.0-1.9 and < 1.0 in DBH classes. If a 5-inch or larger tree is present, Table A6b-2 will be used, otherwise use Table A6a-2.
- Determine the appropriate forest type of the condition based on the tree species present in the condition and/or the forest type of similar conditions in the area. Forest type may be hard to determine, however if it is determined that the condition is forest, then a forest type must be assigned to the condition.

Other things observed on the plot will influence in the determination of condition status. For example, evidence of a recent disturbance that reduced the stocking (cutting, fire, etc.) should be considered. **If the trees are not uniformly distributed throughout the condition or the condition occurs on only a small portion of the plot, (half the plot or less), use your best judgment in assigning status. You may**

place several additional temporary subplots in the condition in order to get a larger sample to base stocking on. When additional temporary subplots or judgment is used to assign land use, a note should be made on the plot sheet.

The following figure illustrates that the dark shaded area are trees, surrounded by a treeless area or an area with only scattered trees. (It could be a forest island surrounded by marsh/bog; a wooded draw in a grazed area; or a farm woodlot that is invading an abandoned field.) Between the forest and the nonforest is a transition zone that is about 40 to 80 ft wide. Because there is a transition zone, not an abrupt forest/nonforest edge, no mapping is done. Subplots 1 and 3 are recorded as 100% in condition 1 and subplots 2 and 4 are put in condition 2. To determine the stocking in condition 2 you could exclude subplot 2 because it is in a transition zone. If needed, several temporary subplots could be installed off subplot 4 to have an adequate sample for determining the stocking of condition 2. Similarly, to get a stocking for condition 1, subplot 1 would be excluded and, if needed, several temporary subplots could be installed off subplot 3.



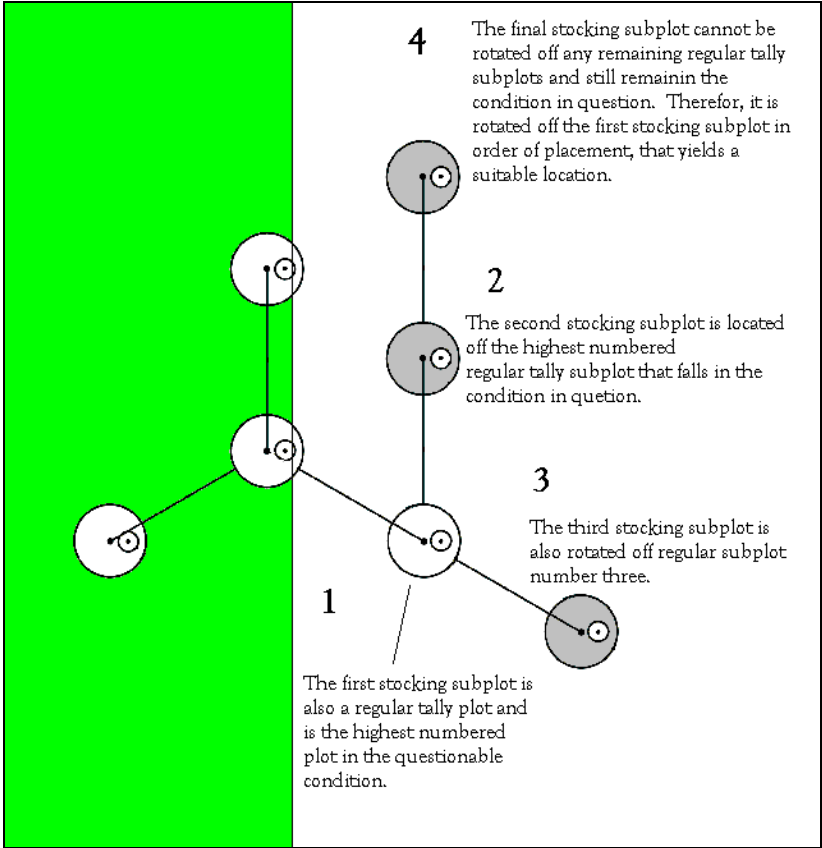
NOTE: The instructions and tables in this appendix were modified from the National Core Field Guide, Version 1.7 for the Northeast field crews.

DETERMINING IF MINIMUM STOCKING LEVEL (10%) IS MET**INSTALLING STOCKING SUBPLOTS**

If it is unclear if a particular condition will meet the minimum stocking level required for CONDITION CLASS STATUS = 1 (accessible forest land), the following procedures will be used to determine the stocking level.

1. To determine if minimum stocking is reached, the crew shall sample all live trees on each of the four 1/24 acre subplots (tree tally), and the four 1/300 acre reproduction plots located 12 ft east of the subplot centers. This sample may consist of any combination of normal subplots and/or temporary subplots, provided all subplots fall entirely in the area in question.
2. The crew shall install temporary subplots as necessary to yield four 1/24 acre sample areas. Attach a sketch showing the temporary subplot layout relative to the actual plot location as illustrated on the next page.
 - a. Begin by locating the temporary subplots off the highest numbered regular subplot that falls in the condition in question. The temporary subplots shall be located in the following order: 1) 120 ft at 360°, 2) 120 ft at 120°, then 3) 120 ft at 240°.
 - b. If this fails to yield 4 subplots that fall entirely within the condition, install the remaining temporary subplots off the next highest numbered regular subplot that falls in the condition in question.
 - c. If this fails to produce a suitable location, rotate the temporary subplot off the other temporary subplots in the order they were established until 4 subplots have been located in the condition.
3. If at any time, the tally indicates that minimum stocking levels have been met, do not install the remaining temporary subplots.

The illustration on the next page shows how the procedure would work for a given situation.



TALLYING STOCKING SUBPLOTS

Once the stocking subplots have been established, the following specific tally procedures shall be used. (Note: Stump sprouts less than 5-in DBH are counted as a single tree.)

1. Determine the forest type of the area in question.
2. Determine if there are any trees (5-in DBH or greater) in the condition. If there are, table A6b-2 will be used to determine stocking levels.
3. If there are no 5-in DBH trees in the condition, table A6a-2 will be used. Then determine the diameter of the largest sapling in the condition. This will determine which column will be used in table A6a-2. If no saplings are present, use the column for diameters of <1.0-in.
4. Begin tallying all live trees on the subplots and microplots according to the diameter classes in table A6a-2 or A6b-2. All species are weighted evenly for a given forest type.
5. For each diameter class, total the stocking values for each stem in the table for the forest type of the condition in question. If your tally reaches the 10% stocking level, you need not continue.

Table A6a-2. Percent stocking value for each stem tallied on four 1/300 acre regeneration plots on forest land in conditions with no trees 5" DBH or greater.

Forest type	DBH of largest tree in the condition														
	4.0-4.9					3.0-3.9				2.0-2.9			1.0-1.9		<1.0
	DBH of tally tree														
	4.0-4.9	3.0-3.9	2.0-2.9	1.0-1.9	<1.0	3.0-3.9	2.0-2.9	1.0-1.9	<1.0	2.0-2.9	1.0-1.9	<1.0	1.0-1.9	<1.0	<1.0
Spruce-fir	6.3	5.0	3.8	2.5	1.2	6.3	4.7	3.1	1.5	6.3	4.2	2.0	6.3	3.0	6.3
Black spruce	6.3	5.0	3.9	2.9	1.7	6.8	5.4	3.8	2.2	7.5	5.4	2.9	8.3	4.4	8.3
Jack pine	8.3	6.8	5.0	3.1	1.4	8.3	5.8	3.9	1.8	7.5	5.0	2.3	7.5	3.6	6.8
Red pine	6.3	4.7	3.6	2.3	1.0	5.8	4.2	2.7	1.2	5.4	3.6	1.6	5.0	2.4	5.0
E. white pine	6.8	5.4	4.2	2.7	1.3	6.8	5.0	3.4	1.6	6.8	4.4	2.1	6.8	3.3	6.3
Loblolly pine	7.5	5.8	4.2	2.7	1.1	6.8	5.0	3.3	1.4	6.3	4.2	1.9	6.3	2.8	5.8
Douglas fir	6.3	5.0	3.8	2.4	1.1	6.3	4.4	3.0	1.4	5.8	3.9	1.9	5.8	2.8	5.8
N. white cedar	5.4	4.2	3.0	1.9	0.8	5.0	3.6	2.3	0.9	4.4	2.9	1.3	4.2	1.9	3.8
Eastern hemlock	6.3	5.0	3.6	2.1	0.7	5.8	3.9	2.4	0.8	5.0	3.0	1.1	4.2	1.7	3.4
Red maple	8.3	6.8	5.4	3.4	1.6	8.3	6.3	4.2	2.0	8.3	5.4	2.7	8.3	3.9	8.3
Red alder	10.7	8.3	6.8	4.4	2.2	10.7	8.3	5.4	2.8	10.7	7.5	3.8	10.7	5.8	10.7
Maple-beech-birch	9.4	7.5	5.4	3.3	1.3	8.3	6.3	3.9	1.6	7.5	5.0	2.1	6.8	3.1	6.3
Paper birch	9.4	6.8	5.0	3.1	1.2	8.3	5.8	3.8	1.5	7.5	4.7	2.0	6.8	3.0	5.8
Oak-hickory	10.7	8.3	6.3	3.9	1.7	9.4	7.5	4.7	2.1	9.4	6.3	2.9	9.4	4.4	8.3
Black walnut	12.5	9.4	6.8	4.7	2.2	10.7	8.3	5.8	2.8	10.7	7.5	3.6	10.7	5.4	10.7
Sweet gum	5.8	4.7	3.4	2.1	0.8	5.4	3.9	2.4	1.0	5.0	3.1	1.3	4.4	2.0	3.9
Aspen	10.7	8.3	6.3	3.9	2.0	10.7	7.5	5.0	2.5	9.4	6.8	3.3	9.4	5.0	9.4
Cherry-ash-y. poplar	9.4	7.5	5.8	4.2	2.4	9.4	7.5	5.4	3.0	10.7	7.5	3.9	10.7	6.3	12.5
Basswood	7.5	6.3	4.4	2.6	0.9	6.8	5.0	3.0	1.1	6.3	3.8	1.5	5.4	2.3	4.4
Elm-ash-cottonwood	9.4	7.5	5.4	3.3	1.3	8.3	6.3	3.9	1.6	7.5	5.0	2.1	6.8	3.1	6.3

Table A6b-2. Percent stocking values for each stem tallied on four 1/300 acre regeneration plots and four 1/24 acre tree tally plots in conditions with a tree 5" DBH or larger.

Forest type	SEED/SAP DBH					TREE DBH													
	<1.0	1.0-1.9	2.0-2.9	3.0-3.9	4.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
Spruce-fir	1.0	2.1	3.3	4.4	5.4	1.0	1.5	2.2	3.0	3.8	4.6	6.0	6.7	7.5	8.6	10.0	12.0	12.0	
Black spruce	1.5	2.4	3.4	4.4	5.4	0.9	1.2	1.7	2.1	2.5	2.9	3.3	3.8	4.0	4.6	5.0	5.5	6.0	
Jack pine	1.2	2.7	4.2	5.8	6.8	1.2	2.0	3.2	4.3	5.5	6.7	8.6	10.0	12.0	15.0	15.0	20.0	20.0	
Red pine	0.8	1.9	3.0	4.2	5.0	0.9	1.5	2.4	3.3	4.3	5.5	6.7	8.6	10.0	12.0	12.0	15.0	15.0	
E. white pine	1.1	2.3	3.4	4.7	5.8	1.0	1.5	2.5	3.3	4.3	5.5	6.7	7.5	8.6	10.0	12.0	12.0	15.0	
Loblolly pine	0.9	2.3	3.6	5.0	6.3	1.0	2.0	3.0	4.3	5.5	7.5	8.6	10.0	12.0	15.0	20.0	20.0	20.0	
Douglas fir	0.9	2.0	3.1	4.2	5.4	0.9	1.5	2.2	3.2	4.0	5.0	6.0	7.5	8.6	10.0	12.0	12.0	15.0	
N. white ced.	0.6	1.6	2.6	3.6	4.4	0.8	1.5	2.2	3.2	4.3	5.5	7.5	8.6	10.0	12.0	15.0	15.0	20.0	
E. hemlock	0.6	1.8	3.0	4.2	5.4	1.0	2.0	3.2	5.0	6.7	10.0	12.0	15.0	20.0	20.0	30.0	30.0	30.0	
Red maple	1.3	2.9	4.4	5.8	7.5	1.2	2.0	3.2	4.3	5.5	6.7	8.6	10.0	12.0	15.0	15.0	15.0	20.0	
Red alder	1.9	3.8	5.8	7.5	9.4	1.5	3.0	3.8	5.0	6.0	7.5	8.6	10.0	12.0	15.0	15.0	20.0	20.0	
Map.-beech-bir.	1.1	2.8	4.4	6.3	8.3	1.5	3.0	4.0	6.0	8.6	10.0	15.0	15.0	20.0	20.0	30.0	30.0	30.0	
Paper birch	1.0	2.7	4.4	5.8	7.5	1.2	3.0	4.0	6.0	8.6	10.0	15.0	15.0	20.0	20.0	30.0	30.0	30.0	
Oak-hickory	1.4	3.3	5.0	6.8	9.4	1.5	3.0	4.0	5.5	7.5	8.6	12.0	15.0	15.0	20.0	20.0	30.0	30.0	
Black walnut	1.8	3.9	5.8	8.3	9.4	2.0	3.0	4.3	5.5	7.5	8.6	10.0	12.0	15.0	15.0	20.0	20.0	30.0	
Sweet gum	0.7	1.7	2.9	3.9	5.0	0.9	1.5	2.6	3.8	5.0	6.7	8.6	10.0	12.0	15.0	20.0	20.0	20.0	
Aspen	1.6	3.4	5.0	6.8	8.3	1.5	3.0	3.5	4.6	6.0	7.5	8.6	10.0	12.0	15.0	15.0	20.0	20.0	
Cher.-ash-y. p.	2.0	3.4	5.0	6.3	7.5	1.5	2.0	2.6	3.3	4.0	4.6	5.5	6.0	6.7	7.5	8.6	8.6	10.0	
Basswood	0.8	2.2	3.8	5.0	6.8	1.2	2.0	3.8	5.5	7.5	10.0	15.0	15.0	20.0	30.0	30.0	30.0	30.0	
Elm-ash-ctwd.	1.0	2.8	4.4	6.3	8.3	1.5	3.0	4.0	6.0	8.6	10.0	15.0	15.0	20.0	20.0	30.0	30.0	30.0	

Example Using Table A6a-2

STOCKING PLOT WORKSHEET					
FOREST TYPE Spruce-fir					
LARGEST DBH IN CONDITION 035					
TEMPORARY SUBPLOT #	SPECIES	DBH (TREE AND SAPLING)	SEEDLING COUNT	STOCKING VALUE	CUMULATIVE TOTAL
X	XXX	XXX	XX	XX.X	XX.X
1	316	010		03.1	03.1
2	097		05	07.5	10.6

(5 x 1.5)

Example Using Table A6b-2

STOCKING PLOT WORKSHEET					
FOREST TYPE Spruce-fir					
LARGEST DBH IN CONDITION 090					
TEMPORARY SUBPLOT #	SPECIES	DBH (TREE AND SAPLING)	SEEDLING COUNT	STOCKING VALUE	CUMULATIVE TOTAL
X	XXX	XXX	XX	XX.X	XX.X
1	012	010		02.1	02.1
2	097		05	05.0	07.1
3	012	076		01.5	08.6
4	012	041		05.4	14.0

(5 x 1.0)